

Appendix C

Appendix C shows a comparison of the amino acid sequences of the SDH domains of the bifunctional LKR/SDH proteins from Arabidopsis, corn and soybean, SEQ ID NOs: 112, 122 and 121, respectively, and the yeast monofunctional glutamate-forming SDH (gi:729968). Amino acids conserved among at least one plant sequence and the yeast sequence are indicated with an asterisk (*) on the top row; amino acids conserved among at least two plant sequences are indicated by a plus (+) above the alignment; dashes are used by the program to maximize the alignment of the sequences.

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          *   * * * * *   *   *   *   *   *   *   *   *   *   *
          ++  ++++++ ++++++  +++  ++++++  +  +  ++++++
SDH domain of SEQ ID NO:112 MTKKSGVLILGAGRVCRAADFLASVRTISSQQWYKTYFGADSEEKTDVHVIVASLYLKD
SDH domain of SEQ ID NO:122 GPK---ILILGAGRVCRAAEFLASYPDICT-----YGVDDHDADQIHVIVASLYQKD
SDH domain of SEQ ID NO:121 ---KAAVLILGAGRVCQPAEMLSSFGRPSSSQWYKTLLEDDFECQTDVEVIVGSLYLKD
GI: 729968 MGKN--VLLLGSGFVAQPVIDTLAA-----NDDINVTVACRTLAN

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          *   *   *   *   *   *   *   *   *   *   *   *   *   *   *
          ++++++ ++++++ +  ++  ++++++ ++++++  ++  ++++++
SDH domain of SEQ ID NO:112 AKETVEGISDVEAVRLDVSDESLLKYVSQVDVLSLLPASCHAVVAKTCIELKKHLVTA
SDH domain of SEQ ID NO:122 AEETVDGIENNTATQLDVADIGSLSDLVSQVEVVISLLPASFHAAIAGVCIELKKHMTA
SDH domain of SEQ ID NO:121 AEQTVEGIPNVTGIQLDVMDRANLCKYISQVDVVISLLPPSCHIIIVANACIELKKHLVTA
GI: 729968 A-QALAKPSGSKAISLDVTDSDALDKVLADNDVVISLIPYTFHPNVVKSIAIRTKTDVVTS

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          +++++  +++++  ++++++ ++++++ ++++++  ++  ++++++
SDH domain of SEQ ID NO:112 SYVDETSMLHEKAKSAGITILGEMGLDPGIDHMMAMKMINDAHIKKGKVKSFYSYCGGL
SDH domain of SEQ ID NO:122 SYVDESMNSLSQAADAGVTILCEMGLDPGIDHLSMKMIDEAHARKGKIKAFYSYCGGL
SDH domain of SEQ ID NO:121 SYVDSSMSMLNDKAKDAGITILGEMGLDPGIGHMMAMKMINQAHVVRKGKIKSFYSYCGGL
GI: 729968 SYISPALRELEPEIVKAGITVMNEIGLDPGIDHLYAVKTIDEVHRAGGKLKSLFSYCGGL

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          ++++++ ++++++ ++++++  +++  ++  ++++++  ++++++  +  +  +++++
SDH domain of SEQ ID NO:112 PSPAAANNPLAYKFSWNPAGAIRAGQNPAYKSNVDIIHVDGKNLYDSAAFVRPNLPAP
SDH domain of SEQ ID NO:122 PSPAAANNPLAYKFSWNPAGAIRSGKNPAVYKFLGETIHVDGHNLYESAKRLRLRELPAF
SDH domain of SEQ ID NO:121 PSPEAANNPLAYKFSWNPAGAIRAGRNPATYKWGETVHIDGDDLYDSATRLRLPDLPAP
GI: 729968 PAPEDSDNPLGYKFSWSSRGVLLALRNSAKYWKDGKIETVSSSEDLMATAPYFI--YPGY

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+++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 ALECFPNRDSLVEGHEHYGIESEATTIFRGTLRYEGFSMIMATLSKLGFFDSEANQVLSTG
SDH domain of SEQ ID NO:122 ALEHLPNRNSLIYGDLYGISKEASTIYRATXRYEGFSEIMVTLSTKTGFFDAANHPLIQDT
SDH domain of SEQ ID NO:121 ALECLPNRNSLLYGDLYGI-TEASTIFRGTLRYEGFSEIMGTLSRISLNFNEAHSLLMNG
GI: 729968 AFVCYPNRDSTLFDKLYHIP-EAETVIRGTLRYQGFPEFVKALVDMGMLKDDANEIF--S

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+++++ ++ +++++ + +++++ + +++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 KRITFGALLSNILNKDADNESEPLAG-----EEEISKRIIKLGHSKE--TAAKAAKTIVF
SDH domain of SEQ ID NO:122 SRPTYKGFDELNNISTINTDLIEASGGYDDDLIARLLKLGCKNKEIAVKTVMKTIKF
SDH domain of SEQ ID NO:121 QRPTFKKFLFELLKVVDNPDPELLIG-----ENDIMEQILIQGHCKDQRTAMETAKTIIF
GI: 729968 KPIAWNEALKQYL-----GAKSTSKEDLIASIDSKATWKDDEDREILSGFAW

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+++ +++++ +++++ +++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 LGFNEEREVPSLCKSVFATCYLMEEKLAYSGNEQDMVLLHHEVEVEFLESKRIEKHTAT
SDH domain of SEQ ID NO:122 LGLHEETQIPKGCSSPFDVICQRMQRMAYGHNEQDMVLLHHEVEVEYPDGQPAEKHQAT
SDH domain of SEQ ID NO:121 LGLLDQTEIPASCKSAFVACFRMEERLSYSTEKDMVLLHHEVEIEYPPDSQITEKHRAT
GI: 729968 LGLFSDAKITPR-GNALDTLCARLEELMQYEDNERDMVVLQHKFGIEWADGT-TETRTST

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++++++ + ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 LLEFGDIKNGQTTTAMAKTVGIPAAIGALVLIEDKIKTRGVLRPLEAEVYLPAL-DILQA
SDH domain of SEQ ID NO:122 LLEFGKVENGSRSTTAMALTVGIPAAIGALLLNKVKQTKGVIRPLQPEIYVPAL-EILES
SDH domain of SEQ ID NO:121 LLEFGKTLDEKTTTAMALTVGIPAAVGALLLTNKIQTTRGVLRPIEPEVYNPAL-DIIEA
GI: 729968 LVDYGVKG--GYSSMAATVGYFVAIATKFVLDGTIKGPGLLAPYSPEINDPIMKELKDK

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SDH domain of SEQ ID NO:112 YGIKLMKAE.
SDH domain of SEQ ID NO:122 SGIKLVEKVET
SDH domain of SEQ ID NO:121 YGIKLIKT-E
GI: 729968 YGIYLKEKTVA

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